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Officers' Meadow, Shenfield

Discussion of noise levels at proposed school grounds

Clive Bentley BSc (Hons) CIEH MIEnvSc MIOA CEnv CSci
Acoustic Consultant and Partner

Sharps Acoustics LLP
21 Monks Mead, Brightwell-cum-Sotwell, OX10 0RL
T 01473 314123 **F** 01473 310007
E clive@sharpsacoustics.com **W** sharpsacoustics.com

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1.0 Introduction

1.1 Sharps Acoustics LLP (SAL) were instructed by Croudace Homes Ltd to carry out an assessment of the impact of noise and vibration on proposed residential development at land at Officers' Meadow, Shenfield, Part of allocated Site R03: Land North of Shenfield. SAL produced a report in September 2023 setting out details of this assessment and this was submitted along with a planning application. We understand that the Council's noise team have raised no objection to the scheme on the grounds of noise or vibration.

1.2 However, Essex County Council (ECC) have raised an objection to the application in the grounds that noise levels within the grounds of the proposed school would be higher than they believe ought to be the case.

1.3 In relation to this, our September 2023 report demonstrated that:

> *Approximately 80% of the land safeguarded for the school provision would experience noise levels below 55dB, $L_{Aeq,16hr}$ and the screening provided by the proposed school building would provide at least one outdoor area suitable for outdoor teaching activities where noise levels are below 50dB $L_{Aeq,16hr}$. The illustrative proposed location of the school building shows that it would be possible to meet the required design standards …"*

1.4 The design standards referred to come from the Institute of Acoustics' guidance in "Acoustics of Schools".

1.5 The ECC consultee has stated that:

> *"The school building/ location is not a mitigation factor and therefore this obligation is not met and therefore does not meet the requirement for 55db LAeq (30min) across the whole site."*

and

> *"In response to the applicant's comments regarding the noise criteria of ECC for the school, our original comments still stand and are not accepted as they do not meet the requirements. The school building and its location is not a mitigating factor and therefore this obligation is not met and does not meet the requirement for 55db LAeq (30min) across the whole site."*

1.6 There is therefore a difference in opinion between SAL and ECC in relation to the requirements. This note seeks to address this difference of opinion, with reference to applicable sources of guidance and explains SAL's view of how the matter should be considered when making a planning decision in this case.

1.7 Before considering the status and provenance of the documents which set the requirements referred to, it is important to understand how these relate to Government planning and noise policy. This note therefore outlines the key requirements in policy and explains their interpretation.

2.0 Planning policy requirements in relation to noise

NPPF

2.1 The Government's overarching policy in relation to planned development is contained in the National Planning Policy Framework (NPPF).

2.2 Paragraph 180 of the NPPF advises that planning polices and decisions should:

> *"… contribute to and enhance the natural and local environment by … preventing new and existing development from contributing to, being put at unacceptable risk from … noise pollution."*

2.3 Paragraph 191 of the NPPF states that Planning policies and decisions should ensure that any:

> *"… new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:*
>
> *a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life …"*

2.4 The NPPF does not provide prescriptive advice on how to avoid noise from giving rise to significant adverse impacts on health and quality of life. Therefore, it is necessary to consider advice in other guidance documents. This advice is discussed below.

2.5 In relation to the statement in paragraph 191 of the NPPF about significance, there is a footnote stating:

> *"See Explanatory Note to the Noise Policy Statement for England (Department for Environment, Food &Rural Affairs, 2010)". This is the NPSE – discussed below.*

NPSE

2.6 The Noise Policy Statement for England was prepared by DEFRA and is dated March 2010. The advice within the document applies to all forms of noise including environmental noise, neighbour noise and neighbourhood noise.

2.7 The NPSE, paragraph 2.12, explains that the WHO defines health as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity".

2.8 The Noise Policy Aims of the NPSE (NPSE paragraphs 2.22 to 2.24) can be summarised as follows:

- avoid significant adverse impacts on health and quality of life…;
- mitigate and minimise adverse impacts on health and quality of life…; and
- where possible, contribute to the improvement of health and quality of life.

2.9 The NPSE makes a distinction between "quality of life", which is a subjective measure, and "health", which refers to physical and mental well-being.

2.10 The NPSE introduces the concepts of the "no observed effect level" (NOEL); the "lowest observed adverse effect level" (LOAEL); and a "significant observed adverse effect level" (SOAEL).

2.11 It is the last of these criteria – the SOAEL – that is the level above which significant adverse effects on health and quality of life occur. As can be seen from paragraphs 2.3 and 2.8 above, this criterion equates to the first aim of the NPSE and the policy requirement in the NPPF.

2.12 The second aim of the NPSE is to mitigate and minimise adverse impacts between LOAEL and SOAEL.

2.13 Specifically, the NPSE advises that, where noise falls between the lowest observed adverse effect level (LOAEL) and the significant observed adverse effect level (SOAEL):

> *"… all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life whilst also taking into consideration the guiding principles of sustainable development. This does not mean that such effects cannot occur."*

2.14 The NPSE advises that it is not possible to have a single objective noise-based measure that defines SOAEL (NPSE paragraph 2.22). Therefore, it is necessary to refer to other advisory documents in order to seek to define such levels.

PPG - Noise

2.15 This "Planning Practice Guidance note – Noise" was released on 6th March 2014 and has been updated since, most recently in July 2019.

2.16 The PPG reinforces the concept of LOAEL and SOAELs discussed above and seeks to define a person's perception at these different effect levels. It describes what is meant by levels below the LOAEL (at the NOEL and NOAEL) under the heading, "*How can it be established whether noise is likely to be a concern?*", as follows:

> *"At the lowest extreme, when noise is not perceived to be present, there is by definition no effect. As the noise exposure increases, it will cross the 'no observed effect' level. However, the noise has no adverse effect so long as the exposure does not cause any change in behaviour, attitude or other physiological responses of those affected by it. The noise may slightly affect the acoustic character of an area but not to the extent there is a change in quality of life. If the noise exposure is at this level no specific measures are required to manage the acoustic environment."* Paragraph: 005 Reference ID: 30-005-20190722. Revision date: 22 07 2019

2.17 The PPG describes levels above the LOAEL, but below the SOAEL, as follows:

> *"As the exposure increases further, it crosses the 'lowest observed adverse effect' level boundary above which the noise starts to cause small changes in behaviour and attitude, for example, having to turn up the volume on the television or needing to speak more loudly to be heard. The noise therefore starts to have an adverse effect and consideration needs to be given to mitigating and*

minimising those effects (taking account of the economic and social benefits being derived from the activity causing the noise).”

2.18 Noise levels below the LOAEL are described as “present and not intrusive” whereas levels above the LOAEL but below the SOEAL are described as “present and intrusive”.

2.19 A “significant” effect is described as *“present and disruptive”* resulting in *“a material change in behaviour, attitude or other physiological response …”*.

2.20 The PPG provides a hierarchy of planning actions required for different perceptions and effects of noise. Between LOAEL and SOAEL the recommended action is to mitigate noise and reduce to a minimum. At SOAEL the action recommended is to avoid. These are the same terms used in the NPPF and NPSE.

Local Policy

2.21 Relevant local policy is set out in the Brentwood Local Plan 2016-2033. Strategic Policy BE14: “Creating successful places” requires that:

“Proposals will be required to meet high design standards and deliver safe, inclusive, attractive and accessible places. Proposals should:

…

mitigate the impact of air, noise, vibration and light pollution from internal and external sources, especially in intrinsically dark landscapes and residential areas.”

Summary of policy requirements

2.22 In summary, government and local planning policy and associated guidance requires that:

- New development should not be put at unacceptable risk from noise pollution;
- significant adverse noise effects should be avoided; and
- if there is a residual adverse noise effect which is less than significant, consideration needs to be given to mitigating and minimising those effects (taking account of the economic and social benefits being derived from the activity causing the noise). Such levels do not need to be avoided.

2.23 The NPPF, NPSE, PPG and local policy do not ascribe noise levels to any of the effects discussed within the three documents. Therefore, it is necessary to consider other guidance which attributes noise levels to health effects.

3.0 Target noise levels required to achieve policy aims

3.1 Schools are subject to a number of mandatory requirements for internal sound levels under the School Premises Regulations 2012, which are normally met through the design of the buildings, glazing and ventilation. For the purposes of site selection and design of the Development at outline planning stage (as with the Development in this case), external sound levels (i.e. for playgrounds and playing fields) must be considered.

3.2 There are no mandatory requirements for outdoor levels. However, guidance is available within the Institute of Acoustics and Association of Noise Consultants jointly published "Acoustics of Schools" (2015). The introduction to the document states that:

> *"The document is designed to accompany the revised performance standards for the acoustic design of schools published by the Department for Education in December 2014, and is a revision of the guidance previously published in 2003 as Sections 2 to 7 of Building Bulletin 93: Acoustic Design of Schools."*

3.3 It contains design guidance as follows:

> *"For new schools, 60 dB LAeq,30min should be regarded as an upper limit for external noise at the boundary of external areas used for formal and informal outdoor teaching and recreation."*

and:

> *"Noise levels in unoccupied playgrounds, playing fields and other outdoor areas should not exceed 55 dB LAeq,30min and there should be at least one area suitable for outdoor teaching activities where noise levels are below 50 dB LAeq,30min. If this is not possible, due to a lack of suitably quiet sites, acoustic screening should be used to reduce noise levels in these areas as much as practicable, and an assessment of noise levels and options for reducing these should be carried out."*

3.4 These recommended levels align with the SOAEL, and LOAEL values referred to in Section 2.0.

3.5 The SOAEL is the level to be avoided: in this case this would occur at levels above 60dB.

3.6 The LOAEL is the level below which there is no adverse effect: this is 55dB for playing fields and 50dB for outdoor teaching areas.

3.7 Levels above 60dB should be avoided and if levels are above 50dB (for outdoor teaching areas) or 55dB (for playing fields) but below 60dB all reasonable steps should be taken to mitigate and minimise the noise (taking account of the economic and social benefits being derived from the activity causing the noise). Such levels do not need to be avoided according to planning and noise policy and guidance.

4.0 Provenance of the ECC requirements

4.1 SAL understand that the ECC requirements come from the "Essex County Council Developers' Guide to Infrastructure Contributions", Revised 2023.

4.2 According to its introduction, the guide:

> *"… details the scope and range of contributions towards infrastructure which Essex County Council (ECC) may seek from developers and landowners in order to mitigate the impact and make development acceptable in planning terms."*

4.3 It's stated aim is to:

> *"… ensure that infrastructure is delivered in a timely manner and thereby ensuring that new development does not have an adverse impact on existing communities, by ensuring the new developments proposed properly and fairly address their own infrastructure needs."*

4.4 The Guide is not a planning or noise policy document and its requirements do not appear to have mandatory status for planning purposes. It explains that the scope and range of contributions may be sought by ECC so there is, it appears, some flexibility in its application. In relation to schools, the guide requires, under the heading "Land compliance requirement for new school sites":

> *It is expected that the developer should supply (as part of the land compliance study report):*
>
> *"Noise Acoustic surveys and reports (for education sites assessment against criteria in DfE Building Bulletin 93)"*

4.5 Building Bulletin 93 (known as BB93) contains no requirements relating to outdoor sound at schools.

4.6 In Section 3.0 of the guide, it discusses Section 106 agreements and in Section 3.4 it provides guidance on legal agreements. It states:

> *"Where the development is supported in the local plan, it may be appropriate to draft a legal agreement prior to planning permission being sought. Generally, however, they are completed once the LPA has determined the application and it is clear that there will not be any abortive effort due to a decision to refuse the application."*

4.7 It then provides a template agreement to assist with drafting clauses for a Section 106 agreement, , stating:

> *"This template should be used as a starting point to avoid delays and unnecessary expense."*

4.8 Within Appendix 3 of Appendix A is a section entitled, "Education Site Specification". This contains the specification which is referred to by ECC in correspondence in this case as an "obligation" and a "requirement". The template wording is as follows:

> *"Subject to the express written agreement of the County Council:*

The Education Site shall be …

… Outside any current or proposed 55db LAeq (30min) noise source or contour"

4.9 SAL have not been able to find any text within the Guide which specifies that 100% of the school grounds must achieve this level.

4.10 The Guide does not specify that the required level must be achieved in the absence of school buildings. If it did, this would be illogical since buildings and other structures will affect external noise levels as they introduce screening for some areas and reflections of sound in others. These effects will both reduce and increase external noise levels and so these must be assessed with buildings and other structures in place to have any meaning once the school is occupied.

5.0 Requirements for noise levels within school grounds at this school

Status of the differing approaches / requirements

5.1 There are therefore two sets of requirements referred in this case. The first, which aligns with national planning and noise policy and guidance, which sets two target levels to achieve, where reasonably possible: 50 and 55dB for outdoor teaching areas and outdoor play areas and 60dB, which should be avoided.

5.2 In contrast to this, ECC refer to a single level, which is intended to be no more than a "starting point" in a template legal agreement: 55dB. The document from which this level has been taken is clearly not intended to provide alternative policy or guidance to national or local planning policy or guidance. It explains that such legal agreements are generally completed once the application has been determined and that guide suggests that it covers contributions which may be sought.

5.3 Despite this, ECC appear to consider that the level referred to in the template is a mandatory maximum level which must not be exceeded in any part of a school grounds. In fact, it is a level, below which there would be no adverse noise effects. In SAL opinion, a small exceedance above this level in a small part of a school grounds (as would occur if the scheme were to be designed as we have shown in our report) would not result in any significant harm; it is highly unlikely to be noticeable.

5.4 In contrast to this, the approach taken by SAL in this matter aligns with national and local policy requirements and ensures that there would be negligible adverse effects due to noise.

ECC "requirement" in context at this site

5.5 To consider further what a noise level of 55dB, $L_{Aeq,T}$ means, it is worth considering other sources of guidance and information, being:

- The World Health Organisation's (WHO) "*Guidelines for Community Noise"* 1999 (GCN) and
- The most recent noise incidence survey: The National Noise Incidence Study 2000/2001 published by the Building Research Establishment. (NIIS)

5.6 The WHO GCN relates to noise, as it applies to a wide range of community receptors. It does not specifically comment on noise in outdoor areas within schools but, in relation to private outdoor amenity areas. It recommends that:

> *"To protect the majority of people from being seriously annoyed during the daytime, the sound pressure level on balconies, terraces and outdoor living areas should not exceed 55dB $L_{Aeq,16h}$ for a steady, continuous noise."*

5.7 This closely aligns with the guidance from the IoA Guide for Schools. It shows that levels below 55dB in private amenity areas would cause no serious annoyance for the majority of people. The only difference is that the IoA Schools Guide adopts a 30 minute assessment period, whereas the WHO guidance uses a 16 hour value. SAL have used a typical 16 hour value as it aligns with the remainder of the site (noise levels in residential amenity areas should be below 55dB, $L_{Aeq,16h}$) and it provides a more reliable basis for the assessment in this case, in our view.

5.8 The NIIS report provides figures which show that more than half of households in the UK are exposed to levels above 55dB, $L_{Aeq,16h}$ during the day.

5.9 This guidance and statistic serve to demonstrate that a noise level of 55dB, $L_{Aeq,16h}$ does not result in significant adverse effects due to noise and, in fact, is very commonly experienced around homes in the UK.

5.10 To assist with context, the noise level within a typical school playing field, when children are present during recreation periods is typically above 60dB, $L_{Aeq,T}$.

Conclusions in relation to requirements

5.11 The approach taken by SAL in this case follows the guidance available on noise levels within schools. The approach taken by ECC takes one aspect of that guidance (ignoring the other recommendations) and misinterprets its meaning. It then dogmatically applies this as if it were a mandatory requirement, which is not the case, according to SAL reading of the document in which it arises.

5.12 The "requirement" referred to by ECC in correspondence:

- Is not mandatory for planning purposes.
- Does not align with national or local planning policy.
- Is not intended to be applied prior to grant of permission.
- Does not require that the whole site is below the specified level.
- Does not prohibit the use of buildings or other structures to screen noise to achieve acceptable levels.
- Does not provide for a suitable outdoor teaching space.

5.13 The approach taken by SAL aligns with planning policy and guidance and our assessment has been based on reliable guidance on noise levels.

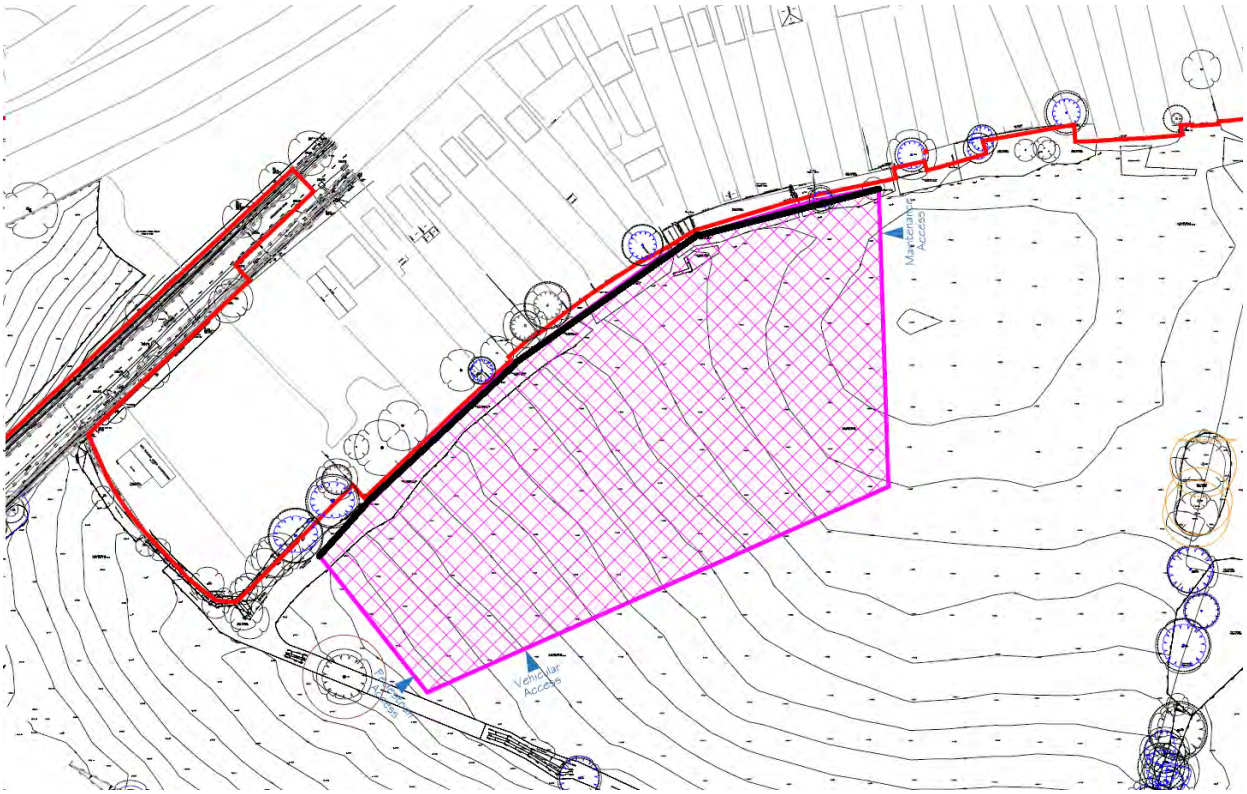
5.14 SAL therefore conclude that the school should be designed so that noise levels in playing fields above 60dB should be avoided and that noise levels should be reduced, so far as can reasonably be achieved, to below 55dB but this does not mean that such levels must be avoided. Also, at least one outdoor area should be provided where levels are below 50dB, $L_{Aeq,T}$ for teaching. We are confident that using school buildings, localised screening provided by other structures is a commonly used and sensible way to reduce noise, where this is required.

6.0 Practical problems with following ECC requirements

6.1 SAL understand that ECC have requested a screen on the boundary of the site which would enable 100% of the site to be below 55dB, $L_{Aeq,30mins}$ with no buildings in place.

6.2 SAL have modelled the size of screen required to achieve this. We have corrected the L_{Aeq16h} value which forms the basis of our assessment to estimate the likely worst case 30 minute period (to meet the 55dB, $L_{Aeq,30min}$ level) and the boundary screen required to achieve this level over 100% of the site with no buildings present would need to be 6.5m high in the location shown (as the bold black line) in Figure 6.1 below.

Figure 6.1: Location of 6.5m high screen required to achieve the Council's "requirement"



6.3 SAL understand that there are trees protected by Tree Preservation Orders and other significant trees in neighbouring properties near the northern boundary of the proposed safeguarded site which would be significantly affected by a 6.5m high screen even if constructed some way away further within the safeguarded site.

6.4 SAL are not professionally qualified to comment on the impact of such a screen on anything other than noise levels but based on our layman's opinion, it seems likely that a screen of this scale would be unacceptable to those already living nearby due to its visual impact.

6.5 The screen would also reflect sound from the A12 back into the gardens, so there would be a small increase in noise levels in existing external amenity spaces which would be likely to be unwelcome.

7.0 Conclusions

7.1 ECC state that they wish to apply a standard which arises within a template legal agreement in a document which provides guidance on Section 106 agreements. SAL have shown that this level is a level below which there would be no adverse effects, not a limit which must be met to avoid a significant adverse effect due to noise.

7.2 The consequence of rigidly applying this limit would be that either:

- there would be an adverse impact on visual amenity and noise levels in existing private gardens adjacent to the boundary and that important trees would be compromised or lost; or
- planning permission may be refused.

7.3 Levels predicted in the SAL report would have a negligible adverse effect (and no significant adverse effect) on those attending the school so there would be a negligible benefit arising from rigidly applying the ECC "requirement". The sole benefit, so far as SAL can see, is that a box within the ECC template agreement would be ticked.

7.4 SAL conclude that the scheme, as submitted, would result in negligible adverse effects due to noise, no significant adverse effects due to noise and that there would be no benefit (and some detriment) in requiring the development to comply with the ECC "obligation". Further, since there is an opportunity to design the site layout, the school buildings and other structures within the grounds taking account of good acoustic design, acceptable noise levels in playing fields and outdoor teaching areas can be achieved throughout the premises.